

CLAIMS

1. A seatback tilt limiter for adjustably limiting the recline of a seatback, the seatback tilt limiter comprised of a first rotator with repeating periodic protrusions, the first rotator having a full forward seatback upright endstop and a full recline seatback endstop, and a second rotator with repeating periodic receivers, the second rotator having an adjustment endstop, the first rotator periodic protrusions disengagably received by the second rotator receivers, wherein the first rotator is free to rotate between the full forward seatback upright endstop and the full recline seatback endstop when the protrusions are disengaged and not received in the second rotator receivers and the second rotator adjustment endstop limits the rotation of the first rotator to an adjustable reclined seatback tilt limit when the protrusions are received in the second rotator receivers.
2. A seatback tilt limiter as claimed in claim 1, the seatback tilt limiter including a magnetic control switch, the magnetic control switch controlling an engagement and disengagement of the protrusions in the receivers.
3. A seatback tilt limiter as claimed in claim 2, the magnetic control switch having a magnetic anchor, the magnetic anchor having a seatback tilt adjustment position wherein the magnetic anchor inhibits engagement of the protrusions in the receivers when the magnetic anchor is in the seatback tilt adjustment position.
4. A seatback tilt limiter as claimed in claim 2, the magnetic control switch having a magnetic anchor, the magnetic anchor having a seatback limited tilt position wherein the magnetic anchor inhibits disengagement of the protrusions in the receivers when the magnetic anchor is in the seatback limited tilt position.
5. A seatback tilt limiter as claimed in claim 1, the seatback tilt limiter including a resilient member for biasing engagement of the protrusions in the receivers.
6. A seatback tilt limiter as claimed in claim 1, wherein the first rotator having a center axis of rotation and the first rotator full forward seatback upright endstop having an

offcenter nonradial endstop contact surface for endstop contact with a housing full forward endstop contact abutment surface.

7. A seatback tilt limiter as claimed in claim 1, wherein the first rotator having a center axis of rotation and the first rotator full recline seatback endstop having an offcenter nonradial endstop contact surface for endstop contact with a housing full recline seatback endstop contact abutment surface.

8. A seatback tilt limiter as claimed in claim 1, wherein the second rotator having a center axis of rotation and the second rotator adjustment endstop having an offcenter nonradial endstop contact surface for endstop contact with a housing adjustment endstop contact abutment surface.

9. A seatback tilt limiter as claimed in claim 8, wherein the second rotator having a spring member, the spring member for biasing the second rotator adjustment endstop contact surface towards the housing adjustment endstop contact abutment surface

10. A method of adjusting a tilt limit of a seatback, the method comprising: providing a first toothed rotator, the first toothed rotator having a forward seatback upright endstop and a recline seatback endstop, providing a second toothed rotator meshed to the first toothed rotator, the second toothed rotator having an adjustment endstop, disengaging the first toothed rotator from the second toothed rotator, positioning the seatback to an adjustable reclined seatback tilt limit with the first toothed rotator rotated relative to the second toothed rotator, engaging the first toothed rotator with the second toothed rotator wherein the seatback is limited to tilting between the forward seatback upright endstop and the adjustable reclined seatback tilt limit.

11. A method as claimed in claim 10, the method including providing a magnetic control switch, the magnetic control switch having a magnetic anchor with a seatback tilt adjustment position and a seatback limited tilt position, and positioning the magnetic anchor at the seatback tilt adjustment position to disengage the first toothed rotator from

the second toothed rotator and positioning the magnetic anchor at the seatback limited tilt position to engage the first toothed rotator with the second toothed rotator.

12. A method as claimed in claim 10 wherein disengaging the first toothed rotator from the second toothed rotator includes compressing a resilient member which biases engagement of the first toothed rotator with the second toothed rotator.

13. A method of making a seatback tilt limiter for adjustably limiting the recline of a seatback, the method comprising: providing a first toothed rotator having a (full) forward seatback upright endstop and a recline seatback endstop, providing a second toothed rotator having an adjustment endstop, providing a resilient member for biasing an engagement of the first toothed rotator with the second toothed rotator, disengagably coupling the first toothed rotator and the second toothed rotator with the resilient member wherein a compression of the resilient member permits the first toothed rotator and the second toothed rotator to disengage to provide for relative rotation between the first toothed rotator and the second toothed rotator to establish an adjusted seatback tilt limit.

14. A method as claimed in claim 13, the method including providing a magnetic control switch, the magnetic control switch having a magnetic anchor with a seatback tilt adjustment position for maintaining the compression of the resilient member.

15. A method as claimed in claim 13 wherein the first toothed rotator comprises a first gear and the second toothed rotator comprises a second gear.

16. A method as claimed in claim 13 wherein the first toothed rotator comprises an inner member and the second toothed rotator comprises an outer member.

17. A method as claimed in claim 13 wherein the first toothed rotator comprises an outer member and the second toothed rotator comprises an inner member.

18. A method as claimed in claim 13, wherein the first rotator having a center axis of rotation and the first rotator forward seatback upright endstop having an offcenter nonradial endstop contact surface for endstop contact with a housing full forward endstop contact abutment surface.

19. A method as claimed in claim 13 wherein the first rotator having a center axis of rotation and the first rotator recline seatback endstop having an offcenter nonradial endstop contact surface for endstop contact with a housing recline seatback endstop contact abutment surface.

20. A method as claimed in claim 13 wherein the second rotator having a center axis of rotation and the second rotator adjustment endstop having an offcenter nonradial endstop contact surface for endstop contact with a housing adjustment endstop contact abutment surface.

21. A seatback tilt angle limiter for limiting the tilt angle recline of a seatback, the seatback tilt angle limiter comprised of a housing endstop contact abutment surface and a rotator, the rotator having a seatback endstop, the rotator having a center axis of rotation about a shaft and the rotator seatback endstop having an offcenter nonradial endstop contact surface for endstop contact with the housing endstop contact abutment surface with the housing endstop contact abutment surface having a nonradial extension wherein an extension of the housing endstop contact abutment surface does not intersect the shaft.

22. A seatback tilt angle limiter as claimed in claim 21, the seatback tilt limiter comprised of a second housing endstop contact abutment surface and the rotator having a second seatback endstop, the second rotator seatback endstop having a second offcenter nonradial endstop contact surface for endstop contact with the second housing endstop contact abutment surface with the second housing endstop contact abutment surface having a nonradial extension wherein an extension of the second housing endstop contact abutment surface does not intersect the shaft .

23. A seatback tilt angle limiter as claimed in claim 21, the seatback tilt limiter comprised of an adjustment housing endstop contact abutment surface and a second rotator having an adjustment seatback endstop and a center axis of rotation about the shaft, the adjustment seatback endstop having an adjustment offcenter nonradial endstop contact surface for endstop contact with the adjustment housing endstop contact abutment surface with the adjustment housing endstop contact abutment surface having a nonradial extension wherein an extension of the adjustment housing endstop contact abutment surface does not intersect the shaft.

24. A method of making an angle limiter, the method comprising:
providing a housing endstop contact abutment surface, providing a rotator, the rotator having a seatback endstop and a center axis of rotation, the rotator seatback endstop having an offcenter nonradial endstop contact surface for endstop contact with the housing endstop contact abutment surface, positioning the rotator proximate the housing endstop contact abutment surface wherein the housing endstop contact abutment surface has an offcenter orientation with the rotator center of rotation.

25. A method as claimed in claim 24, the method including providing a shaft, providing an adjustment housing endstop contact abutment surface and a second rotator having an adjustment seatback endstop and a center axis of rotation about the shaft, disengagably coupling the rotator having the seatback endstop and the center axis of rotation through the shaft to the second rotator having the adjustment seatback endstop with the adjustment housing endstop contact abutment surface having an offcenter orientation with the shaft wherein the second rotator adjustment seatback endstop has an offcenter nonradial adjustment endstop contact surface for adjustment endstop contact with the adjustment housing endstop contact abutment surface.

26. A method as claimed in claim 25 wherein disengagably coupling includes providing a first toothed member and a second toothed member for disengagably receiving the first toothed member.

27. A seatback tilt limiter magnetic control switch, the magnetic control switch comprised of a magnetic anchor and a first magnetic target and a second magnetic target, the magnetic anchor having a seatback tilt adjustment position adjacent to the first magnetic target and a seatback limited tilt position adjacent to the second magnetic target wherein a first magnetic attraction between the magnetic anchor and the first target and a second magnetic attraction between the magnetic anchor and the second target inhibit positioning the magnetic control switch in a neutral position between the seatback tilt adjustment position and the seatback limited tilt position.

28. A seatback tilt limiter magnetic control switch as claimed in claim 27 wherein the first magnetic attraction is greater than the second magnetic attraction.

29. A seatback tilt limiter magnetic control switch as claimed in claim 27 wherein the first target and the second target float within a mount constraint.

30. A seatback tilt limiter magnetic control switch as claimed in claim 27 wherein the first magnetic attraction maintains a compression of a resilient member.

31. A magnetic control switch, the magnetic control switch comprised of a magnetic anchor and a first magnetic target and a second magnetic target, the magnetic anchor having a first position adjacent to the first magnetic target and a second position adjacent to the second magnetic target wherein a first magnetic attraction between the magnetic anchor and the first target and a second magnetic attraction between the magnetic anchor and the second target inhibit positioning the magnetic control switch in a neutral position between the first position and the second position.

32. A magnetic control switch as claimed in claim 31 wherein the first magnetic attraction is greater than the second magnetic attraction.

33. A magnetic control switch as claimed in claim 31 wherein the first target and the second target float within a mount constraint.

34. A magnetic control switch as claimed in claim 31 wherein the first magnetic attraction maintains a compression of a resilient member.

35. A magnetic control switch, the magnetic control switch comprised of a control arm, the control arm having an engaged position and a disengaged position, a magnetic anchor, a first magnetic target and a second magnetic target wherein a first magnetic attraction between the magnetic anchor and the first target and a second magnetic attraction between the magnetic anchor and the second target inhibit positioning the control arm in a neutral position between the engaged position and the disengaged position.

36. A magnetic control switch as claimed in claim 35 including a resilient member, the resilient member biasing the control arm to the engaged position and the first magnetic attraction is greater than the second magnetic attraction.

37. A magnetic control switch, the magnetic control switch comprised of a control arm, the control arm having an engaged position and a disengaged position, a magnetic anchor, a first magnetic target and a second magnetic target wherein a first magnetic repulsion between the magnetic anchor and the first target and a second magnetic repulsion between the magnetic anchor and the second target bias positioning the control arm in a control position between the first magnetic target and the second magnetic target.

38. A magnetic control switch, the magnetic control switch comprised of a magnetic anchor and a first magnetic target and a second magnetic target, the magnetic anchor having a first position adjacent to the first magnetic target and a second position adjacent to the second magnetic target wherein a first magnetic field between the magnetic anchor and the first target and a second magnetic field between the magnetic anchor and the second target bias positioning the magnetic control switch in a home position.

39. A method of making a seatback tilt limiter for adjustably limiting the recline of a seatback between a seatback forward upright endstop and a seatback recline endstop, the method comprising: providing a first toothed rotator gear member with a plurality of repeating periodic gear teeth, providing a second toothed gear member with a plurality of repeating periodic gear teeth and having an adjustment endstop, disengagably coupling the first toothed rotator gear member repeating periodic gear teeth with the second toothed gear member repeating periodic gear teeth wherein the second toothed gear member adjustment endstop provides an adjustable recline angle seatback endstop between said seatback forward upright endstop and said seatback recline endstop .

40. A method as claimed in claim 39, wherein providing a second toothed gear member with a plurality of repeating periodic gear teeth and having an adjustment endstop includes providing a sliding linear gear member.

41. A method as claimed in claim 39, wherein providing a second toothed gear member with a plurality of repeating periodic gear teeth and having an adjustment endstop includes providing a rotating gear member.